

**ABSTRACT**

A method and apparatus is disclosed for processing two or more signals received over a multichannel communication system to cancel or mitigate coupling and the effect of the channel on the two or more signals. In one embodiment a multichannel communication system utilizes DMT processing to transmit two or more signals over two or more channels. To recover the transmitted signal, processing in the receiver may comprise submitting the two or more signals to a matrix filter configured to cancel the effects of the channel, such as phase and magnitude distortion, and account for self FEXT. In addition, decision directed processing may occur, generating one or more cancellation signals based on the noise on the output of the matrix filter. By filtering the noise terms and generating a crosstalk compensation signal, the transmitted signal is recovered more faithfully and the performance of the communication system is improved.